

What is claimed is:

[Claim 1] A method for scatter correction during simultaneous bi-plane imaging comprising:

generating a first x-ray flux in a first imaging plane;

generating a first image readout;

digitally sampling a first scatter signal from said first x-ray flux in a second imaging plane; and

generating a first compensation signal for said first scatter signal.

[Claim 2] The method of claim 1 wherein generating a first compensation signal further comprises activating a first scatter image formation algorithm;

generating said first compensation signal; and

storing said first compensation signal in a first scatter correction memory.

[Claim 3] The method of claim 1 further comprising generating a second x-ray flux in said second imaging plane;

generating a second image readout; and

compensating for scatter in said second image readout with said first compensation signal.

[Claim 4] The method of claim 3 further comprising generating a third x-ray flux in said first imaging plane;

generating a third image readout;

generating a fourth x-ray flux in said second imaging plane;

generating a fourth image readout;

digitally sampling a second scatter signal from said fourth x-ray flux in said first imaging plane;

and

generating a second compensation signal for said second scatter signal.

[Claim 5] The method of claim 4 further comprising generating a second digital scatter readout;

generating a fifth x-ray flux in said first imaging plane;

generating a fifth image readout; and

compensating for scatter in said fifth image readout with said second compensation signal.

[Claim 6] The method of claim 5 further comprising activating a first scatter correction algorithm in response to said second image readout and said first compensation signal; and
generating a first image display from said first scatter correction algorithm.

[Claim 7] The method of claim 6 further comprising periodically updating said first image display through stopping a current exposure in said second imaging plane and reading a scatter image update resulting from an exposure in said first plane.

[Claim 8] The method of claim 5 further comprising activating a second scatter correction algorithm in response to said fifth image readout and said second compensation signal; and
generating a second image display from said second scatter correction algorithm.

[Claim 9] A method for scatter correction during simultaneous bi-plane imaging comprising:
generating a first x-ray flux in a first imaging plane;
generating a first image readout;
digitally sampling a first scatter signal from said first x-ray flux in a second imaging plane;
generating a first compensation signal for said first scatter signal;
generating a second x-ray flux in said second imaging plane;
generating a second image readout; and
compensating for scatter in said second image readout with said first compensation signal.

[Claim 10] The method of claim 9 further comprising generating a third x-ray flux in said first imaging plane; and
generating a third image readout.

[Claim 11] The method of claim 10 further comprising generating a fourth x-ray flux in said second imaging plane;
generating a fourth image readout;
digitally sampling a second scatter signal from said fourth x-ray flux in said first imaging plane;
and
generating a second compensation signal for said first scatter signal.

[Claim 12] The method of claim 11 further comprising generating a second digital scatter readout;

generating a fifth x-ray flux in said first imaging plane;

generating a fifth image readout; and

compensating for scatter in said fifth image readout with said second compensation signal.

[Claim 13] The method of claim 12 further comprising activating a first scatter correction algorithm in response to said second image readout and said first compensation signal; and

generating a first image display from said first scatter correction algorithm.

[Claim 14] The method of claim 13 further comprising periodically updating said first image display through stopping a current exposure in said second imaging plane and reading a scatter image update resulting from an exposure in said first plane.

[Claim 15] The method of claim 12 further comprising activating a second scatter correction algorithm in response to said fifth image readout and said second compensation signal; and

generating a second image display from said second scatter correction algorithm.

[Claim 16] A scanning system comprising:

a gantry;

a first x-ray source coupled to said gantry, said first x-ray source adapted to generate a first x-ray flux and a first plane scatter signal;

a second x-ray source coupled to said gantry, said second x-ray source adapted to generate a second x-ray flux and a second plane scatter signal;

a first x-ray detector system coupled to said gantry, said first x-ray detector system adapted to generate a first detector signal in response to said first x-ray flux and further adapted to generate a first scatter signal in response to said second plane scatter signal;

a second x-ray detector system coupled to said gantry, said second x-ray detector system adapted to generate a second detector signal in response to said second x-ray flux and further adapted to generate a second scatter signal in response to said first plane scatter signal;

and

a host computer adapted to receive said first detector signal, said second detector signal, said first plane scatter signal, and said second plane scatter signal, said host computer further adapted to digitally sample said first plane scatter signal, generate a

first image readout in response thereto, generate a first compensation signal for said first scatter signal, and store said first compensation signal in a first scatter correction memory.

[Claim 17] The system of claim 16 wherein said host computer is further adapted to generate a second image readout, and compensate for scatter in said second image readout with said first compensation signal.

[Claim 18] The system of claim 17 wherein said first x-ray source is further adapted to generate a third x-ray flux in said first imaging plane, and said second x-ray source is further adapted to generate a fourth x-ray flux in said first imaging plane, and wherein said host computer is further adapted to digitally sample a second scatter signal from said fourth x-ray flux in said first imaging plane, and generate a second compensation signal for said first scatter signal.

[Claim 19] The system of claim 16 further comprising generating a second digital scatter readout, wherein said first x-ray source is further adapted to generate a fifth x-ray flux in said first imaging plane, wherein said host computer is further adapted to generate a fifth image readout, and compensate for scatter in said fifth image readout with said second compensation signal.

[Claim 20] The system of claim 19 wherein said host computer is further adapted to activate a first scatter correction algorithm in response to said second image readout and said first compensation signal; and

generate a first image display from said first scatter correction algorithm.

[Claim 21] An x-ray image data file representative of internal portions of an object, the file comprising:

first digital data representative of internal portions of the object when exposed to a first x-ray source;
second digital data representative of internal portions of the object when exposed to a second x-ray source substantially simultaneously with exposure to the first x-ray source, wherein the first x-ray source is displaced from the second x-ray source, the first digital data has been modified to compensate for scattered radiation from the second x-ray source and the second digital data has been modified to compensate for scattered radiation from the first x-ray source; and
third digital data representative of a characteristic of the object.

[Claim 22] The data file of claim 21, wherein said first and second digital data is generated by respective digital x-ray detectors and is representative of at least one image of the object.

[Claim 23] The data file of claim 22, wherein the object is a person and said third digital data is representative of at least one of the person's name, identification number or physical condition.

[Claim 24] The data file of claim 23, wherein said first and second digital data is generated when said first and second x-ray sources are located at least three positions relative to the patient, and three positions define an arc.

[Claim 25] The data file of claim 24, wherein said arc has a fixed radius.

[Claim 26] The data file of claim 23, wherein said first and second digital data is generated when said first and second x-ray sources are located at least three positions relative to the patient, and three positions are located along a straight line.

[Claim 27] The data file of claim 25, wherein said arc has an infinite radius.

[Claim 28] The data file of claim 23, wherein at least one image is of the person's chest cavity.

[Claim 29] A method of generating revenue comprising:

generating a first digital data representative of internal portions of an object when exposed to a first x-ray source;

generating a second digital data representative of internal portions of an object when exposed to a second x-ray source substantially simultaneously with exposure to said first x-ray source, wherein said first digital data has been modified to compensate for scattered radiation from said second x-ray source and said second digital data has been modified to compensate for scattered radiation from said first x-ray source;

generating a third digital data representative of a characteristic of said object; and

generating a request for a payment of money based upon at least said third digital data.

[Claim 30] The method of claim 29, wherein said first and second digital data is generated by respective digital x-ray detectors and is representative of at least one image of said object.

[Claim 31] The method of claim 30, wherein said object is a person and said third digital data is representative of at least one of the person's name, identification number or physical condition.

[Claim 32] The method of claim 31, wherein generating said first and second digital data includes at least the step of exposing a person's chest cavity to said first and second x-ray sources.

[Claim 33] The method of claim 29, wherein generating said first and second digital data includes:

generating first scatter data representative of radiation scattered from said first x-ray source when said second x-ray source is not radiating x-rays;

generating second scatter data representative of radiation scattered from said second x-ray source when said first x-ray source is not radiating x-rays;

performing said compensation of said first digital data based on said second scatter data; and

performing said compensation of said second digital data based on said first scatter data.

[Claim 34] The method of claim 32, wherein generating said first and second digital data includes:

generating first scatter data representative of radiation scattered from said first x-ray source when said second x-ray source is not radiating x-rays;

generating second scatter data representative of radiation scattered from said second x-ray source when said first x-ray source is not radiating x-rays;

performing said compensation of said first digital data based on said second scatter data; and

performing said compensation of said second digital data based on said first scatter data.

[Claim 35] The method of claim 34, further comprising the step of transmitting said first, second and third digital data over a computer network.

[Claim 36] The method of claim 35, wherein said computer network is the internet.

[Claim 37] The method of claim 36, wherein said computer network is one of a wide-area computer network or a local-area computer network.

[Claim 38] The method of claim 24, further comprising storing said first, second and third digital data in reference to said request for payment and data representative of payments associated with said request for payment.

[Claim 39] The method of claim 38, further comprising determining a service charge associated with said request for payment.

[Claim 40] A system for imaging internal portions of an object comprising:

a first radiation source;

a second radiation source displaced from said first radiation source;

a first digital detector supported relative to said first radiation source to generate first digital data representative of the object when exposed to a first radiation source;

a second digital detector supported relative to said second radiation source to generate second digital data representative of the object when exposed to a second radiation source substantially simultaneously with exposure to said first radiation source, wherein said first digital detector selectively generates first scatter data representative of radiation scattered from said first radiation source when said second radiation source is not radiating x-rays and second scatter data representative of radiation scattered from said second radiation source when said first x-ray source is not radiating radiation; and

a digital data processor coupled to said detectors to modify said first digital data with said second scatter data to compensate for scattered radiation from said second radiation source and to modify said second digital data with said first scatter data to compensate for scattered radiation from said first radiation source.

[Claim 41] The system of claim 40, wherein said data processor is further configured to store third digital data representative of a characteristic of the object.

[Claim 42] The system of claim 41, wherein said characteristic is one of an object type, an object name, an object location, an object destination, an object identification number, an object owner, an object source or an object shape.

[Claim 43] The system of claim 40, further comprising a human viewable display for generating an image associated with said modified first and second digital data.

[Claim 44] The system of claim 43, further comprising a conveyor for supporting an object, and the object is one of baggage, packages, liquid containers or envelopes.

[Claim 45] The system of claim 43, wherein the object may be a vehicle and said radiation sources and detectors are supported relative to a vehicle imaging location.

[Claim 46] The system of claim 43, wherein said data processor is further configured to store third digital data representative of a characteristic of the object, and the object is a person.

[Claim 47] The system of claim 46, wherein said viewable display is configured to further generate alphanumeric or graphical images representative of said characteristic simultaneously with the image.

[Claim 48] The system of claim 47, wherein said characteristic is one of a name, age, weight, identification number, location, view, or physical condition of the person.

[Claim 49] The system of claim 48, further comprising a gantry for moving said radiation sources relative to the patient.

[Claim 50] The system of claim 49, further comprising a network interface coupled to said processor for communicating first, second and third digital data over a network.